In the Claims:

1. (Currently Amended) An electrical transducer using a two-wire process comprising:

an analog sensor that detects a quantity to be measured;

an analog end stage which is connected downstream of the sensor;

a processor circuit; and

wherein the processor circuit is not connected serially between the sensor and the anlog end stag so that an analog measurement signal transmission path, the analog end stage converting an output signal of the sensor into an impressed output current with a magnitude which is a measure of the quantity to be measured, the electronic transducer ~~capable of~~ being controlled by ~~with~~ the processor circuit, wherein during normal operation of the electrical transducer, the processor circuit is shifted temporarily into a sleep mode, the analog measurement signal transmission path includes ~~and~~ an analog scaling unit ~~are inserted~~, the output signal of the sensor and at least one analog setting value are supplied to the analog scaling unit, and the output signal of the analog scaling unit is supplied to the analog end stage.

2. . (Currently Amended) The electrical transducer of claim 1, wherein the analog scaling unit is an analog arithmetic circuit to which as the at least one analog setting value, a DC voltage signal or a direct current signal is delivered.

3. (Currently Amended) The electrical transducer of claim 2, wherein ~~there~~ is at least one ~~of at least one~~ active integrator, as the actuator for ~~the~~ at least one DC voltage signal, ~~or, at least one direct current signal and the active integrator~~ is connected to the processor circuit and to the scaling unit.

4. (Currently Amended) The electrical transducer of claim 3, wherein the at least one active integrator is ~~integrators are~~ a component of a control circuit within the processor circuit.

5. (Original) The electrical transducer of claim 2, wherein the analog arithmetic circuit comprises at least one analog multiplier.

6. (Original) The electrical transducer of claim 5, wherein the analog multiplier is a single quadrant multiplier.

7. (Currently Amended) The electrical transducer of claim 5, wherein the analog arithmetic circuit further comprises ~~at least one of~~ at least one subtractor and at least one adder.

8. (Original) The electrical transducer of claim 5, wherein the analog arithmetic circuit comprises a plurality of transistors and a plurality of operational amplifiers.

9. (Original) The electrical transducer of claim 1, further comprising a power source that produces a non-zero output current.

10. (Currently Amended) The electrical transducer of claim 6, wherein an adder is connected to the input of ~~the~~ a single quadrant multiplier, and a subtractor and an adder are connected to the output of the single quadrant amplifier.

11. (Currently Amended) The electrical transducer of claim 1, further comprising an attenuator, ~~capable of~~ having an adjustable time constant, ~~is~~ connected between the analog scaling unit and the analog end stage.

12. (Currently Amended) The electrical transducer of claim 11, wherein the attenuator comprises ~~at least one~~ a plurality of different RC elements which ~~can be~~ are selectively connectable ~~connected~~ via the processor circuit.

13. (Currently Amended) The electrical transducer of claim 11, wherein an analog error at the output of the attenuator ~~can be~~ is compensated by a control circuit.

14. (Currently Amended) The electrical transducer of claim 1, further comprising three power supply terminals, one of which is ~~a third power supply terminal, the third power supply terminal~~ connected to a detector means so that when a predetermined ~~certain~~ power supply voltage is applied to ~~the third~~ said one of the power supply terminals, the transducer automatically switches to three-wire operation.

15. (Original) The electrical transducer of claim 14, wherein the detector means is connected to the processor circuit, and the processor circuit shifts permanently into the awake mode during three-wire operation.

16. (Currently Amended) A method of producing an indication of a measured value with an electrical transducer via an output current which is proportional to the measured value, the transducer comprising a sensor, an electronic circuit which is connected downstream of the sensor, and a processor circuit, the electronic circuit converting an output signal of the sensor into an impressed output current with a level corresponding to the measured value, the electrical transducer ~~capable of~~ being programmed using the processor circuit, wherein during normal operation of the transducer, the processor circuit is shifted temporarily into a sleep mode, the output signal of the sensor is supplied to an analog scaling unit, at least one analog setting value is supplied to the analog scaling unit, and the output signal of the analog scaling unit is supplied to the electronic circuit.

17. (New) The electrical transducer of claim 2, wherein at least one active integrator, as the actuator for at least one direct current signal and the active integrator, is connected to the processor circuit and to the analog scaling unit.